miles below the historical spawning grounds and about 12 river miles upstream of the Pollock's Ferry site used in the 1988 (Rulifson 1989) study (Figure 2). Sampling was initiated on 15 April and was terminated on 14 June 1991.

Procedures for field sampling and sample workup were similar to those used by W.W. Hassler to ensure compatibility of the data sets. Many of the tables and figures presented in my study are similar to Hassler's for purposes of comparison.

Sampling for striped bass eggs was conducted six times daily at four-hour intervals (0200, 0600, 1000, 1400, 1800, and 2200 hours) by trailing paired 10-inch diameter nets constructed of 500-um nitex mesh (6:1 tail-to-mouth ratio) from a small aluminum boat anchored in mid-stream. A solid sample jar attached to the tail of each net was used to retain collected eggs. Two sample efforts of five-minute duration were made: the first sample six inches below the surface (Hassler's method), and the second sample near the bottom. This procedure allowed comparisons of egg density at the surface with the abundance of eggs near the bottom . A flowmeter with slow speed propeller was attached to the bongo frame to estimate the theoretical volume of water filtered. This methodology produced two estimates of egg production: 1) an estimate of egg density per unit of water filtered; and 2) an estimate of total eggs in the cross-sectional area of the river (Hassler's method). The cross-sectional area of the river at the sampling site was determined for the range of water levels encountered during the study. River stage, air and water temperatures, dissolved oxygen, conductivity, pH, total dissolved solids, and water velocity were recorded for each sample. Instruments used to measure environmental parameters were calibrated periodically according to U.S. Environmental Protection Agency (USEPA) standard methods. Secchi visibility depth was recorded for all samples taken during daylight hours.

The unpreserved samples were returned to the field station for immediate examination. Eggs collected by both nets were enumerated and averaged for each surface tow and each bottom tow. For each sample, all eggs were examined to determine viability and stage of development. Egg viability was determined as described by Hassler et al. (1981): each was examined to determine the status of the embryo (development), yolk and oil globules (intact), perivitelline space (cloudy or clear), and whether the chorion was broken or intact. Viable eggs were staged under a dissecting microscope using the criteria established by Bonn et al. (1976). Stage 1 included eggs less than 10 hours old. Stage 2 eggs were those 10 to 18 hours old. Stage 3 eggs were 20 to 28 hours old, and Stage 4 eggs were 30 to 38 hours old. Stage 5 were eggs 40 hours and older, and newly-hatched larvae. Stage of development was based on an assumed water temperature of 17°C since this is the only published photographic and written description available. Eggs spawned at water temperatures greater than this value will develop faster and hatch earlier (Shannon 1970).

Data were entered into the mainframe computer at East Carolina University and analyzed using the Statistical Analysis System, Version 5 (SAS 1985). The estimated number of striped bass eggs passing the sampling station was calculated on a daily basis using the equation